

XXIII.—*On certain Lycenidæ from Lower Tenasserim.*

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(With Plate XXIII.)

The following list includes most of the *Lycenidæ* taken by me in Tenasserim from January to March, 1889, inclusive. I have been unable to identify four or five *Arhopalæ* near *A. vihara* and *metamuta*. And I can only mention the few species of *Lampides* and *Nacaduba* which I happened to pin. Consisting wholly of low-country species (with but one exception), taken in the driest part of the dry season, the list represents only a part of the Tenasserim *Lycenidæ*. When all the species are known, those of the mountains and those of the valleys, those of the wet season and those of the dry, it seems to me quite possible that the number may be doubled.

The Mergui species were taken at the Taw-jaung monastery a few miles from the town, in low-country forest near the coast. The species marked *Myitta* were taken at my various camps in the Tenasserim valley, near the Siamese border, east of Tavoy. Except one species—*Surendra florimel*—they were all taken below one thousand feet altitude.

After devoting much time to the study of the structure of butterflies, and filling several note-books with descriptions of the young larvæ, tarsi, scent-organs, prehensors, scales, etc., I had in 1887 the great misfortune to lose most of them in the Malay Archipelago, together with a great collection of insects. The chief survivors were my notes on the egg, a part of my drawings of prehensors, and the descriptions of a few genera and species partly of this family which had been prepared for publication in 1886, some of which will appear in Mr. de Nicéville's "Butterflies of India." I have therefore been obliged to commence afresh, and as yet my material is too small to achieve one of my principal objects, a proper classification of the *Lycenidæ*. So the following attempted generalizations must be held as provisional only.

In 1886, I divided the family into six subfamilies, based chiefly on the form of the egg. To these another must be added, the *Liphyrinæ*, which besides our single Indian species, includes, perhaps, a few African forms. In four of the six other subfamilies, the egg seems to afford good characters for defining them, though a few small genera, which I have as yet studied but imperfectly, seem difficult to place. The two other groups, which I called the *Theclinae* and *Amblypodinae* had better be united, forming a large mass of genera and species very difficult to arrange. In the *Amblypodias* especially, the egg seems to lose much of

its systematic value, and varies to a remarkable extent in forms much alike in general structure and appearance. So it is with great hesitation that I propose four sections based partly on it. Typically they are all four distinct enough, but seem to be connected by certain low forms of *Arhopala*, underlying them as it were, as if indicating the original ancestors from which they all sprang.

Egg large, tubercular, indentations	
obscurely hexagonal,...	... <i>Aphnæus</i> group.
Egg similar, not tubercular,	... <i>Loxura</i> group.
Egg small, tubercular, indentations	
sharply cut, usually trigonal,	... <i>Thecla</i> group.
Egg small, spiny, indentations sharply	
cut, tetragonal,	... <i>Arhopala</i> group.

The *Aphnæus* group has the egg convex above (as in all the subfamily), yellowish, large and coarse, overlaid with a thick, rough, vesicular, white or yellowish crust, covered with large blunt wheels or knobs (often but little elevated) and indented with obscure hexagonal spaces. This type of egg reaches its extreme form in *Neocheirtrix*, in which the indentations are fewest and coarsest, while in *Chrysophanus* they are numerous, and in *Curetis* numerous and cut into hexagons with some distinctness. In *Amblypodia*, as now limited, the egg is much the same as in *Neocheirtrix*, and the genus had better be put here. It resembles the *Arhopalas* in some things, but its venation shows it to be a very isolated form. The male has a fifth subcostal branch wanting in the female, and the middle discocellular, like the upper, is oblique, and greatly thickened, seeming to be the basal part of the lower radial vein. In *Iraota*, another genus hard to place, there is no middle discocellular, the radials having a common origin. Most genera of the *Aphnæus* group have elongate wings, with the outer margin of the forewing more or less oblique, and the costal and subcostal veins somewhat crowded together, the cell being near the costa (remote in *Arhopala*), which is but little rounded. The hindwing has two tails in most of the genera.

The *Loxura* group is obviously an offshoot of the *Aphnæus* group. The egg is large and white, without tubercles. In the typical genera, *Loxura*, *Yasoda** and *Eoözyliides*†, it has a cornice round the flat, table-

* *Yasoda*, gen. nov. Differs from *Eoözyliides* in having but one tail; from *Loxura* in having only three subcostal veins (four in *Loxura*) in the forewing, and a large black sex-mark on the hindwing of the male above, on the lower median vein.

† I described this genus as *Marshallia*, naming it after Colonel G. F. L. Marshall, but the name turned out to be pre-occupied. As the name *Indoözyliides*, which I proposed instead of it, seems to have reached Mr. de Nicéville too late to

like apex (which is less than half the diameter of the base), the surface very smooth, with numerous minute indentations, which, in occasional imperfectly developed specimens,* are distinctly hexagonal. The other three Indian genera—*Drupa*, *Biduanda* and *Suasa*—are less peculiar, and *Suasa* is obviously related to *Zeltus*, *Oheritra*, and other normal aphnæiform genera. Their eggs lack the subapical carina. In *Drupa* and *Biduanda*, they are hemispherical, with rounded indentations larger than in *Loxura*. In *Suasa* the indentations are large, shallow, and distinctly hexagonal, looking as if impressed with a die. These six genera form a series, approaching the *Aphnæus* group, but have some features in common. They are all protected. The forewing is short and broad, the outer margin erect, the costa strongly arched, the hindwing elongate posteriorly. The prehensors are elongate and of a peculiar facies.

An *Arhopala*, apparently *inornata*, Felder, and one or two obscure allied species undescribed from Malaya, have eggs somewhat as in *Loxura*, but coarser and without the cornice. This peculiarity is associated with others in the imago, on which I shall form the genus *Lois*, the position of which is uncertain.

The *Thecla* group has much smaller eggs nearly always greenish, the lines enclosing triangular spaces, six of them radiating from each tubercle, which is roughly spherical, constricted at the base. This sculpturing, which is very distinctly cut, is elsewhere found only in the concave eggs of certain *Lycænidæ*. The section is a very indistinct one, its members tending to unite severally with the *Aphnæus* or *Arhopala* groups. I have had few opportunities of studying *Zephyrus*, and have never examined the true *Thecla*. As a group they seem to have both wings short and broad, the costa much rounded, the veins slender, the hindwing usually with one tail. *Surendra* may be distinguished from *Zephyrus* by the obsolescent discocellular veins. So far as these are visible, they are very upright, the middle one of the forewing unusually long, differing widely in these respects from all the succeeding genera,

be incorporated in his key to the genera of the *Lycænidæ*, he has called it *Eobzyklides*. My description of the genus as well as those of my genera *Yasoda*, *Massaga*, *Arastes* and *Taraka*, all made in 1886, will appear in his next volume. I have recorded *Eobzyklides tharis* from Bassein, Burma, but it did not turn up in Tenasserim.

* These curious eggs are usually rough or discoloured, and the sculpturing differs more or less from that of the others. I have found them in all the sections of the *Lycænidæ*. They are usually exceedingly rare, but are more frequent in some *Arhopalas*, so that their eggs may fairly be called dimorphic. They are not immature, being quite hard, and at least occasionally produce perfect larvæ. I think they are atavismus, representing an earlier stage of development, the egg perhaps of some remote ancestor.

especially *Arhopala*. It includes four species resembling each other but slightly.

A number of species connect these genera with the *Arhopalas*. The egg varies greatly in these. *Panchala* (*ganasa*), *Acesina* and *Flos* (genus novum) are distinguished by the long costal vein of the forewing, and the structure of the third and fourth subcostal veins, which, after their separation, are short, very unequal, and very close to the costa. In *Panchala* and *Acesina*, the costa of the hindwing is slightly tilted up at the apex, there is no lobo (a tail in *Acesina* only), and the underside is dull-coloured. In *Flos* the costa of the hindwing is regularly rounded, there is a conspicuous lobe and a tail, and the underside is richly marked. The type is *apidanus*, and the genus is widely distributed, occurring from the Himalayas to the Austro-Malayan islands. *Darasana* has the subcostal veins as in *Panchala* and *Flos*, but a very short costal vein in the forewing, the cell of which is more remote from the costa. It has no lobo or tail, and seems a tolerably distinct genus. Some species of *Flos* have an egg with triangular spaces. The typical species have, however, a small green egg with rough vesicular raised lines enclosing hexagons, and very small irregular knobs at their intersection. The egg of *Mota massyla* is somewhat similar, but there are no tubercles, and the reticulation is more delicate. The wings are not unlike those of *Zephyrus* in structure with an additional tail; the colouring is somewhat as in *Flos*.

In the *Arhopala* group the egg is a remarkable one. It is also rather small, delicate, usually green with raised white lines enclosing quadrangles (as in the *Deudorigine*), and bearing acute spines at their intersection. This type of egg occurs in all the large swift-flying *Arhopalas*, and in many of the smaller and obscurer kinds. They all have the costal vein of the forewing shorter than in *Flos* and its allies, and the subcostal branches normal. They agree with those genera, and differ from the other *Theclineæ* in the position of the cell, which is remote from the costa, and in the length, and slightly oblique direction of the upper discocellular vein. A number of the obscurer species have eggs with tubercles and triangles as in the *Thecla* group, but I do not know any structural points by which they can be separated from the rest.

The *Arhopalas* are extremely uniform in structure, as in aspect, and on account of their great numbers are difficult to arrange. In them it would be advisable to admit generic distinctions wherever it is possible to make them.

The *Thecla* and *Arhopala* groups agree in many particulars, one of the most striking resemblances being that of the prehensors, which in all the genera known to me are short and thick, the branches of the

unci stout, the claspers broad and truncate. A careful examination will probably result in the separation of the *Aphnæus* and *Loxura* groups from these under the name *Aphnæinae*.

The small subfamily of *Deudorixinae* is characterised in the male by the lower organ of the prehensors, the claspers or *harpagones*, being aborted and functionless, adhering to the intromittent organ. The abdomen of the female is pointed, and ends in a pair of long ovipositors. The egg is very small, green, covered with very numerous tetragonal spaces, bordered by raised transparent lines, very delicately carved, with little button-like tubercles at their intersection. The hindwing has always a very prominent anal lobe, a single tail at the end of the lower median, and a distinct angle at the end of the middle median vein. *Deudorix* and its allies belong here, as well as *Araotes** and *Sithon*. The genera *Bindakara* and *Lehera*, which have also only one tail, can scarcely be included in any definition of the subfamily, nor *Neomyrina*, which has a very *Deudorix*-like egg.

The *Poritia* come near the *Aphnæus* group of the *Thecline*, I believe, the reticulations being hexagonal. On account of their relations with the *Lemoniadae* they might be placed at the head of the family. They can be distinguished by the joined costal and first subcostal veins of the forewings, a character occurring in *Sithon*, in many *Lycaeninae*, and also, I observe, in a remarkable insect described as *Hypolycaena libna* and *Logania andersonii*, Moore, from Mergui, which may possibly connect *Poritia* with the *Lycaeninae*. I have described the egg of *Poritia* in a former article. The base is quadrate, twice as long as wide, there is a square apex, two square sloping sides, and two vertical rhomboid ones.

The *Lycaeninae* are distinguished by their decidedly concave eggs, broadest above the middle. The reticulations are often irregular, and vary greatly on different parts of the surface. Those on the sides consist of small white knobs constricted at the base, from which spring either four or six elevated lines, forming quadrangles or triangles. In *Catopocilma* the spaces are hexagonal, and in *Semanga* irregular. I include these genera here with much doubt; they are obviously transitional to the *Thecline*. The typical *Lycaena* group, containing the great majority of the subfamily, has hairy eyes, though the hairs are few and scattered in *Castalius* and *Zizera*. The *Pithecopus* group consists of naked-eyed genera, of which the eggs of *Megisba* and *Pithecopus* have tetragonal spaces, and *Neopithecopus* triangular.

* *Araotes*, gen. nov. nearest *Sithon*, but with an additional subcostal vein in the forewing. The middle discocellular is obsolescent (distinct in *Deudorix* and its allies), the first subcostal touches the costal vein (united with it in *Sithon*, quite separate in the other *Deudorixinae*), and there is but one tail (two in *Biduanda*, in which the type-species *lapithis* was placed by Mr. Distant).

I place here a few genera of dubious position. *Lycaenesthes* with its spiculate egg, flattened above, shows affinities with *Deudoria*, but is connected with the *Lycaeninae* by *Niphanda*, which (*N. tessellata*) has concave eggs. The egg of *Spalgis* is much flattened above, and delicately reticulated with irregular hexagons. Its position, like that of the following genera, can hardly be understood till the insects of tropical Africa, the great storehouse of low forms of *Lycaenidae*, are better known. Next to *Spalgis* I place the singular genus *Taraka* (mihi), of which the type is *Miletus hamada*, Druce. This genus greatly resembles *Neopithecops*, and like it is probably protected. It may be separated from it by the narrow cell nearer the costa, and by the oblique discocellulars. From *Spalgis* it differs in the antennae, which are much as in the *Pithecops* group, slender, annulated, with a short, distinct terminal club, while *Spalgis* has short stout antennae, gradually thickened. The prehensors of *Taraka* are wholly lycaeniform. The egg is remarkable, and bears a decided resemblance to those of the *Gerydinae*, with which Mr. Druce first placed it. The apex is flattened, a little concave, irregularly reticulate, with a strong crenulated carina projecting both upwards and outwards, around the margin. Seen from the side, it is irregularly quadrate, a little widest at base, the sides smooth. The genus is evidently related to *Liphyra* and the older and more generalized forms of the *Gerydinae* included in the genera *Logania* and *Malais*.

I have made a careful description of *Taraka mahaneltra*, a very rare Malayan species somewhat resembling *Castalius elna* in colouring. I caught but a single pair of this species, and both I believe are now lost. Generally, they agreed with *T. hamada* in structure, but the forefoot of the female (as well as that of the male) was imperfect, and the joints of the tarsi immovable. As it is just possible that this peculiarity may have been due to gynandromorphism, I merely mention it, and reserve *hamada* as the type of the genus. The egg of *mahaneltra* I, unluckily, do not know. The description of this species will appear in Mr. de Nicéville's work.

The *Gerydinae* can best be defined by the prehensors, the egg, very abnormal in most of the genera, approaching the lycaeniform shape in *Logania* and *Malais*. The clasps (*harpagones*) are small and normal. Fortunately, they are very variable in shape, and afford good specific characters, which are especially valuable in the difficult genus *Logania* and in *Allotinus*. The *unci* or upper organs are developed into immenso knife-like blades, fitting into the tufted, scabbard-like, greatly elongate last joint of the abdomen. Each uncus has a branch, shaped something like a human femur or humerus, fitting to the middle of the under surface of the uncus with a ball-and-socket joint, and when at rest ap-

pressed to the edge of the blade, the tip, which is clavate and ends in a short hook not visible from the side, reaching the base of the uncus. This construction varies but little in all the genera and species of the group. A remarkable feature of the subfamily lies in the fore tarsi being in both sexes similar to the middle and hind ones, just as in *Fapilio* or *Hesperia*. This also occurs, according to Mr. Trimen, in certain African genera, such as *Arrugia*, which from his account of them seem to belong to this group. The legs of *Gerydus* are curiously flattened in both sexes, those of *Allotinus* and *Paragerydus* are long and slender, those of typical *Logania* have the ends of the tibiae swollen. One or two species hitherto included in this last genus have the legs slightly flattened and very short and stout, the tibiae being thickest in the middle. These fully deserve to form a separate genus, for which I propose the name *Malais*. It will include *L. marmorata* and *L. sriwa* (probably the same species), and one or two rare kinds undescribed, ranging from Pegu to Borneo. Since the preceding remarks were written, I have taken a true *Logania* in Upper Assam.

The egg is usually very much flattened, but, in *Logania* and *Malais*, it is scarcely more than twice as wide as high, as in many *Lycænas*. Except in *Paragerydus* and a few *Allotini*, which have much flatter eggs, there is usually a number of strong lateral horizontal carinae, two, three, four, or five according to the species, either simple or broken into short teeth. These teeth are placed in vertical series, one above the other, giving the outer margin of the egg, and indeed the egg itself if it is much flattened, the appearance of a cogged wheel. Thus the usual oblique reticulations of the *Lycænidae* give place on the outer border to vertical (the teeth) and horizontal (the carinae) lines, a remarkable feature. The upper surface is, however, obliquely reticulated with delicate raised striae.

This vertical reticulation is more pronounced in the egg of *Liphyra*, which, as might be expected from the strangeness of the insect itself, is very unlike that of other *Lycænidae*. It shows, however, an unexpected resemblance to that of *Logania* and *Taraka*. The egg is of great size, green, overlaid with white, shaped something like a section or "drum" of a Doric column, but somewhat widest at the base, the height, breadth at apex, and breadth at base being to each other as 9, 13, and 15½. The top is marked with hexagonal reticulations, the lines turbinate in the middle, the margin deeply channelled, and then strongly carinate, the carina projecting both upwards and outwards, white, its contour even. The base is also obscurely carinate. The sides are crusted with white, and minutely indented, with about forty-five vertical ribs, slightly irregular and even (very rarely) anastomosing, extending also over the

outer part of the base, the inner part being green and minutely reticulated with hexagons. The prehensors I do not know. The fore-tarsi are, I believe, the same in both sexes, as in the *Gerydine*.

Liphyra brassolis flies slowly with a distinct humming sound and an uncertain circling flight, hesitating a long time before alighting. Whether it is, as it seems, a protected species, or whether, as I believe, it flies chiefly at twilight and so escapes capture, I do not know. No one would ever take it for a butterfly; few moths are more typically moth-like in flight. It is probably the oldest type of *Lycaenid* existing, and unconnected with the rest, except through such primitive dwarf forms as *Taraka* and the smaller *Gerydine*. It is the only Asiatic representative of the subfamily *Liphyrinae* and its nearest allies are apparently African.

A word deserves to be spoken on the subject of green butterflies, since it seems one little understood at home. Early in the century Horsfield professed to have found a green female of the Javanese *Arhopala eumolphus*, the true female of which is blue. Recently, Mr. Distant has described, as the female of *A. farquharii*, a butterfly bright green over the basal half of the wings above. Now, the real female of *farquharii* (perhaps the form described as *A. maxwellii*, Distant) is violet-blue and one of the most constant of butterflies. Of the green form mentioned, I took several specimens in the Malay Peninsula and in Borneo, and they were all males. It is a rare species undescribed, perhaps identical with the Horsfieldian form.

Grant Allen shows that, while greenish flowers are among the oldest, really green flowers are the most recently developed of all and among the most conspicuous. Very much the same thing is true of *Lepidoptera*. Pale green moths, like *Actias*, *Geometra*, and *Pachyarches*, are protected by their colouring, which is common to both sexes, and are quite hidden when resting among the leaves. Such seems also to be the case with *Lehera eryx**, a lycaenid which is greenish on the *underside*, and may possibly be the case with some *Catopsilias*. But bright metallic-green is, I think, the latest developed colour among butterflies, and decidedly the most conspicuous. No one who has not seen it can imagine the brilliancy of *Arhopala farquharii* or *Ornithoptera brookeana* in the greenest jungle. The brightest of the metallic-blue butterflies look dim beside them. It may be confidently asserted of all such butterflies that, unless the species is protected, only the male is green. The protected *Ornithopteras* have sometimes assumed green colours as well as golden

* The underside is green or greenish in many South American *Theclae*, but such cases are very unusual in Eastern *Lycaenidae*.

and orange, and the female shares in this useful ornamentation to some extent. In non-protected butterflies the green is confined to the upper-side, and is quite invisible except during flight. In the *Lycænidae** it is found in many *Zephyri*, in some *Poritias* and *Massagas*,† in a few *Arhopalas*, and in *Lampides marukata*, a rare butterfly I discovered in the Malay Peninsula and named after its emerald tint above. Among all these, whenever the female is known, it is blue, orange, black, violet, or any other colour but green. The conservative and, in butterflies, unadorned sex, has not yet acquired the latest development in colours. It is also remarkable that the green colours seem to occur where the genus is most dominant. The Malay Peninsula and Borneo form the great centre of development of the genera *Arhopala* and *Lampides*, and it is there that most of the green species occur. The outlying *Arhopalas*, those of the North-West Himalayas, and the Timorian islands, are all blue. In *Zephyrus*, the green species are found only where the genus is best represented and most vigorous. *Zephyrus pavo*, a species found in the Bhutan and Assam hill-ranges, remote from the regular habitat of the genus, has, I discovered, the male blue and greatly resembling allied females from the Western Himalayas. The green and orange *Ornithopteras* also occur only in the heart of the *Ornithoptera* region. These remarks on green butterflies also apply in some degree to certain other *unusual* colours of great brilliancy, such as the shining coppery gold of *Ilerda brahma*, and the fiery red of *Thamala marciiana*. It ought to be borne in mind that such colours must never be ascribed to a female without careful examination.

Subfamily THECLINÆ.

Arhopala Group.

1. ARHOPALA (NILASERA) CENTAUREUS, Hew.

Mergui, Myitta.

2. ARHOPALA ANARTE, Hew.

One male, Myitta. This is the form described, from Sumatra according to Kirby, by Hewitson in his Cat. Lyc. Brit. Mus., and is

* Some rare species of *Neocheritra* are green above in some lights, especially *N. martina*, a Bornean species. The allied *N. hypoleuca* was also figured by Hewitson as green, apparently by mistake. The *Neocheritras* are among the swiftest and shyest of butterflies, and the bright colours of their upperside are only seen during flight.

† *Massaga*, gen. nov. nearest *Deramas*, Distant, but with only four subcostal veins in the forewing, instead of five. From *Poritia* it differs in the upper radial vein, which arises from the subcostal, a little beyond the end of the cell; in the cell of the hindwing, and in the markings of the underside, which are not annular but simple and linear. Sexes very unlike. Type *Poritia pediada*, Hew.

altogether different from the female (from the Malay Peninsula) described by him under the same name in the Diurn. Lepid. afterwards, the male of which has been named *agnis* by Felder, who recognised Hewitson's error. *Anarte* is one of the most beautiful of Tenasserim butterflies.

3. *ARHOPALA AGNIS*, Felder.

One female, Mergui.

4. *ARHOPALA ANTHELUS*, Doub.

Mergui, a very brilliantly coloured species.

5. *ARHOPALA SUBFASCIATA*, Moore.

Myitta. The costal and apical black is somewhat wider in the female, which does not differ greatly from the male.

6. *ARHOPALA PASTORELLA*, n. sp., Plate XXIII, Fig. 12.

Male above light cerulean blue, brilliantly metallic, outwardly slightly virescent and less resplendent; forewing with a slender black marginal and costal line, hindwing blue from the costal vein to the submedian, a marginal black line. *Below* rather dark fuscous brown, the markings darker, bordered by slightly paler lines, only the basal spots annular, the other like parentheses, so (). *Forewing* with three in the cell, a transverse one below it, and one in the base of the lower median space. The transverse discal band is rather broad, the first four spots united and compact, the first small, close to the costa, the second broadest, the fifth and sixth dislocated inwardly, compactly united; a submarginal row of obscure dark spots bordered within and without by obscure paler touches. *Hindwing* with the basal spots of moderate size, annular, a transverse discal series of nine spots in a tolerably regular semicircle, all somewhat annular, none approaching the terminal cell-streak; a submarginal row of obscure dark cordate spots bordered with paler, a slight metallic green streak in the lower median space, and a similar band from the lower median to the submedian vein, both bordered with black. The lobe is small, black; there are slight projections at the end of the lower median and submedian veins, but no distinct tails; the outer margin is regularly rounded without undulations. *Expanse* two inches.

Myitta. In the colour of the upperside this butterfly perhaps resembles *A. lycenaria*, Felder, a small species and tailed. It is very near *agelastus*. But that species is more violet apically, and not distinctly metallic above; below, the transverse bands are more regular; the costal spot of the forewing absent, and the general colour duller, more fuscous and less rufous.

7. *ARHOPALA AGELASTUS*, Hew.

A common species, Mergui, Myitta, where one or two similar forms

occur which may or may not be distinct from it Mr. de Nicéville has pointed out to me that on the forewing of the male of the allied *A. antimuta* there is a curious clouded disc, perhaps of the nature of a sex-mark. This is sometimes just traceable in *agelastus*.

8. *ARHOPALA VIHARA*, Feld.

Mergui. I obtained several species of this very difficult group, but not having access to authenticated specimens of the allied species *aroca*, *atosia*, *yendava*, etc., I am unable to identify them.

9. *ARHOPALA METAMUTA*, Hew.

Mergui, Myitta.

10. *ARHOPALA DAVISONII*, de Nicé, MS.

Mergui, Myitta, Tavoy. This species, which is quite distinct from the preceding one, belongs to a most difficult group which can hardly, I think, be understood without a careful study of the prehensors. *A. davissonii* is one of the commonest and most ubiquitous of Malayan insects and is abundant in Borneo.

11. *ARHOPALA DUESSA*, n. sp., Pl. XXIII, Fig. 6.

Male above bright cerulean blue over fully half of the forewing, the apex widely, the costa and outer margin moderately, and the veins slenderly black. Hindwing with the cell and extreme base of the lower median space irrorated with blue scales. Below light brown, the costal and apical half of the forewing, including the upper half of the cell, and all the hindwing, glossed with pale violet, the markings violet brown with violet-whitish irides, only the basal ones annular. Forewing with three transverse spots in the cell, a double one in the basal part of the lower median space, a very broad compact dark transverse discal band unbroken from the costa to the submedian vein; the apex with a whitish patch. Hindwing with basal annular spots, an irregular one at the end of the cell, outwardly acuminate, and a very irregular transverse discal band of which the first and second spots are compactly united with the terminal cell-spot, the other five small and separate, forming an irregular chain; an outer discal pale fascia forming a large violet-whitish mass near the apex, the disc also clouded with whitish; an obscure submarginal line of pale violet lunules, the marginal line dark. No metallic subanal markings. Forewing distinctly undulated outwardly, hindwing without tails, lobes or undulations. Expanse $1\frac{1}{2}$ inch.

Two males, Myitta. I know no species closely resembling this. It may be allied to *bazalus*, but has no tail or lobe. The distribution of the blue on the upperside is very unusual.

12. *ARHOPALA PERISSA*, n. sp., Pl. XXIII, Fig. 11.

Male, above rich uniform purple blue over fully half the forewing and two-thirds of the hindwing. Forewing with the costal border and

lower angle narrowly, and the apex widely black. Hindwing with the costa widely and the outer margin narrowly black, the blue extending beyond the submedian vein. *Below* dull fuscous-brown, the markings but slightly darker, bordered by lines a little paler, only the basal spots on the hindwing annular, the others with straight borders. *Forewing* with three spots in the cell and a broad uniform band, unbroken and but slightly curved from the third subcostal to the lower median vein, the base of the lower median space and the upper and basal part of the inter-no-median space dark, separated distinctly from an outer pale area in that space; a submarginal line of obscure darker spots bordered by a slightly paler line. *Hindwing* with the basal spots small and well separated, a streak across the end of the cell extending to the submedian vein, and a transverse discal band dislocated outwardly below the lower subcostal vein, continuous in the next four spaces; submarginal markings as on the forewing, a metallic green fascia from the lower median to the submedian vein, and a touch of it in the lower median spot. The hindwing is distinctly undulate outwardly; it has no tail and but slight traces of a lobe. Expanse $1\frac{2}{3}$ inch.

Myitta. I know no species closely resembling it. It is a richly coloured butterfly above, but the underside is unusually dull.

13. *ARHOPALA MIRABELLA*, n. sp.

Male above bright violet-blue, dull violet in some lights, over fully five-sixths of the forewing, the marginal black band moderate and nearly equal on both wings. *Below* light fuscous, glossed with pale violet, the markings large, numerous, distinct and crowded, consisting of deep brown spots, paler in the middle, set in distinct violet-whitish rings or parenthetic lines. *Forewing* with the three usual cell spots large, a double series of costal marks, the transverse band much broken, the spot in the lower radial space (the fourth) extruded; no distinct marks below the cell, two submarginal violet-whitish lines, the inner lunular, the outer straight, obscure. *Hindwing* with the basal spots annular, the basal costal one obsolescent; the transverse discal band with only the first pair of spots continuous (the second touching the terminal cell-spot which is large, parenthetic), the others irregular, the third dislocated outwardly, the fifth inwardly; two submarginal lunular lines, the anal angle with three small black spots bordered with metallic green, behind which is a narrow irrorated whitish fascia. *Female* with the blue somewhat paler and covering only half the forewing, and the hindwing from the costal vein (basally) and the upper subcostal almost to the submedian; the dark border rather wide. Both sexes have a slender tail tipped with white, and a small, distinct lobe. Expanse $1\frac{1}{2}$ inch.

A male from Mergui, a female from Myitta. Nearest *A. alitans*,

Hew. from the Celebes, but seems to be darker below, with a broader black border above. From *achelous*, Hew. it also differs in the broader black border, and the apex of the hindwing below is not lilac. The blue above seems also darker and richer. From *aida*, de Nicéville, it differs in the strong violet gloss and the large and crowded annulations, occupying most of the cell of the forewing and extending thence nearly to the costa, on the underside; the upperside is very similar. The figure of *A. mirabella* was omitted by accident.

14. *ARHOPALA BELPHIGEBE*, n. sp., Plate XXIII, Fig. 18.

Male, above light, rather dull purple-blue over about half of the forewing, the dark border wide on the hindwing. *Below* much like *mirabella*, but the costal markings of the forewing are absent, and the transverso discal band is composed of spots nearly annular on the forewing and entirely so on the hindwing. The three upper spots on the forewing form a line outwardly oblique, the next two are united. *Hindwing* with the three basal spots small and crowded together, the others large, distinctly outlined with violet white, that at the end of the cell irregular, produced outwardly to a point in the lower median space as in *A. duessa*; the transverse band annular, nearly regular, composed of slightly united pairs, the middle pair out of line; a double line of obscure pale submarginal lunules on both wings. Expanse $1\frac{1}{2}$ inch.

Myitta. This species is something like the female of the preceding one, but the blue is paler and more lilacine. It has no tail and scarcely any lobe. It has also some resemblance to *A. agesias* from Borneo.

15. *ARHOPALA ALBOPUNCTATA*, Hew.

Myitta. This species, like *A. theba* and *A. aronya* from the Philippines and a beautiful undescribed Celebesian species, mimics the genus *Lampides* both on the upper and underside, resembling *L. elpis* and its allies. Another *Arhopala* (*critala*, Felder, from the Moluccas) mimics the *daniis* group of *Cyaniris* most faithfully.

16. *ARHOPALA AMMON*, Hew.

Myitta. The Tenasserim form of this beautiful little species may be distinct from the Malayan one, but in the absence of an authentic specimen of the latter I cannot at present decide.

17. *ARHOPALA FARQUHARI*, Distant.

This species seems quite distinct from *eumolphus*, not, as Mr. Distant says, on account of the dislocated transverse band of the forewing, which often occurs in *eumolphus*, but on account of the uniform dull brown colour of the underside, the pale rings enclosing slightly darker brown spots, while in *eumolphus* the wings are washed with bronzy grey, the ground colour varying in different places, the spots small and distinct, while the anal green area is usually obsolescent. The female of *farquharii*

is bright blue over fully half the forewing, its edge serrate, with a wide brown border on both wings, darkening where it borders on and deeply indents the blue subapically. The species is extremely uniform everywhere, and is abundant from Tavoy and Mergui to south-eastern Borneo.

18. *ARHOPALA HELLENORE*, n. sp., Plato XXIII, Fig. 7.

Nearest *eumolphus*. The green of the upperside is rather more tinged with golden, and the dark border is somewhat narrower on the forewing and much narrower on the hindwing, extending less than a third towards the base of the lower median space. Below both wings are conspicuously marked with whitish, which forms a large apical mass on the hindwing in which the transverse markings are very distinct, and across both wings in an obscure discal band. The subanal metallic green markings are obsolescent. The dark markings are large, as in *farquharii*, from which it seems quite distinct, though it may be the local Tenasserim form of *eumolphus*. One male, Mergui. Expanse $1\frac{7}{8}$ inch.

19. *ARHOPALA MAXWELLII*, Distant. (?).

I am uncertain whether, as Mr. de Nicéville suggests, the female taken by Mr. Biggs and figured by Mr. Distant as *A. maxwellii*, is really the female of *farquharii*, or whether, as I thought at first, it is the female of a male taken by me at Myitta. This is a dark violet-blue butterfly, very much like *agaba* above, but singularly like *farquharis* below, distinguished, however, by the large distinct basal spots of the hindwing, the large costal spot of the forewing opposite that at the end of the cell, and by the first four spots of the discal band forming a very regular quadrate mass. Neither by the figure nor the description can I distinguish it from *maxwellii*. But Mr. Distant is much more likely to have obtained *farquharii*, which is abundant, than this species, which is rare, and Mr. de Nicéville's theory is probably correct. In that case my male remains unidentified.*

20. *ARHOPALA (SATADRA) AGABA*, Hew.

Myitta, Tavoy.

21. *ARHOPALA (SATADRA) AIDA*, de Nice, MS.

Mergui, a very common species. In typical species of *Satadra*, such as *atrae* and *rama*, the tail and lobe are well developed, but in others they tend to disappear, so that it would be hard to define the genus.

22. *MAHATHALA AMERIA*, Hew.

Mergui, Myitta, common.

* Since this was written I have learned that Mr. de Nicéville will describe this species as *Arhopala aïtoea*.

*Thecla Group.*23. *APPORASA ATKINSONII*, Hew.

The genus and the species were both, I believe, founded on a single specimen of uncertain sex and with the tails broken off. I took one male and two females near Myitta, having spatulate tails much like those of *Mahathala*. They differed from that genus in the less acuminate apex of the hindwing, in the egg (which was covered with triangles and tubercles instead of quadrangles and spines, a difference apparently of small importance in these butterflies), and in the more undulate margin of the hindwing, which gives it a most peculiar appearance. But the insect has, when sitting on a tree-trunk, a marvellous resemblance to a patch of lichen, and the irregular outline adds to this effect. Mimicry of this sort is a sign of great flexibility of structure and such genera must be judged by severer canons than others; so that it is doubtful whether *Apporasa* can stand.

24. *DARASANA PERIMUTA*, Hew.

Mergui, Myitta.

25. *FLOS APIDANUS*, Cram.

Mr. Distant makes no mention of the singular scarlet costal area at the base of both wings below in this species, though they had long ago been observed by Cramer and Godart. They are occasionally present, though much less marked, on the forewing of some of the Himalayan species of this genus, as Mr. de Nicéville has shown me.

One female, Mergui. This species is the type of my genus *Flos*, the life-history of which I hope to publish before long. I have taken it in Eastern Java, and slightly different forms occur in the Celebes and in the mountains of Sambawa. For a partial description of *Flos*, see above.

26. *FLOS ABSEUS*, Moore.

Myitta, agreeing perfectly with Sikkim specimens.

27. *FLOS ARTEGAL*, n. sp., Pl. XXIII, Fig. 5.

Male, above, base azure, darkening outwardly to violaceous blue, quite violet in some lights; on the forewing the blue occupies less than half of the surface, the black border reaching the upper angle of the cell, and extending unusually far up the hind-margin. *Hindwing* with a blue area from the costal and upper subcostal veins to the submedian, its outer margin irregular, the black border wide. *Below, forewing* light brown, the costal half glossed with violet, a large triangular violet-whitish area (somewhat as in *Elymnias*) on the costa near the apex; three wide dark violet-brown transverse bands, edged with paler, one in the cell; the second across its end, extending from the second subcostal to the lower median; the third oblique, unbroken, with straight

sides, from the costa to the upper median, continued irregularly almost to the lower median; margin, except at the apex, dark, a marginal blackish line. *Hindwing* very deep chocolate brown, a paler, violet-glossed band, edged by a paler line, across it from the costa to the submedian vein, crossing the cell; beyond this a dark transverse band; apex with a large dark area, its margin violet-whitish; disc mostly glossed with violet, its lower part irrorated with violet-whitish scales; a dark submarginal fascia, rather wide and conspicuous subanally; an obscure metallic-green and black ocellus in the lower median space, and one on the lobe, the green extending to the submedian vein. The forewing is rounded outwardly, the hindwing slightly scalloped, with a distinct lobe and a very short tail at the end of the lower median vein. Expanse $1\frac{1}{3}$ inch. In its small size and short tail it differs from the other species of the group. Two males, Mergui.

28. *SURENDRA QUERCETORUM*, Moore.

Myitta.

29. *SURENDRA AMISENA*, Hew. (*Rapala amisenae*, Dist.).

Mergui, Myitta. The female agrees well with Hewitson's figure, except that the transverse discal line of the forewing below is more irregular, and like that of his figure of *Surendra vivarna*. The male differs from Distant's figure in being more angulate, the forewing being acuminate and slightly falcate. The blue area above varies greatly, sometimes occupying less than a third of the forewing and a sixth of the hindwing, sometimes more than half of the forewing and a third of the hindwing. In this species the male has a short tail at the end of the lower median vein, but scarcely more than an angle at the end of the middle median; the lobe is much smaller than in *S. quercetorum*. The female has two tails, both slender, the outer the shorter.

30. *SURENDRA FLORIMEL*, n. sp., Pl. XXIII, Figs. 17, ♂; 4, ♀.

Male, above, rich purple-blue, from the costal vein to the hind margin, the blue area outwardly angled at the upper median vein, and occupying nearly half of the forewing. On the hindwing it extends from just below the lower subcostal to the submedian vein, leaving the upper part of the cell dark; a narrow black marginal line. *Below* the ground is light fuscous brown as in *amisenae*, but with the cell and disc of the forewing much darker and the basal and apical half of the hindwing deep violet brown. *Forewing* with a short oblique dark streak in the middle of the cell, a larger one across its end, and one or two costal ones; a transverse discal line of joined lunules (separated in *amisenae*) from the second subcostal to below the lower median, projecting outwardly below the lower radial vein; apex widely and outer margin narrowly pale fuscous. *Hindwing* with the transverse discal fascia con-

sisting of a broken, dull silvery line on a deep-brown ground, an obscure outer-discal transverse band, pale on the dark apical and dark on the pale abdominal ground; an obscure metallic patch in the lower median space.

Female, above, dull brown, a slightly paler area in the middle of the disc. Below the dark area of the forewing is confined to the neighbourhood of the median spaces on the disc, that of the hindwing to a band across the wing from the apex to the hind margin, crossing the end of the cell; a distinct whitish spot basally between the costal and subcostal veins, the inner transverse line united, crossing the dark area subapically; the outer one consisting of pale lunules bordered, especially outwardly, by a dark band, in which there are two dark subapical spots, the second larger. Expanse $1\frac{1}{2}$ inch. This species has the hindwing strongly angled at the end of the middle median vein, and quite straight thence to the anal angle; there is no trace of tails or lobes. The forewing is not falcate in either sex. The egg and venation are as in *amisena* and *quercetorum*. It is a very distinct species, and the male is very richly coloured.

One male and several females taken on the pass near Wagang, Tavoy district, at 1,500 ft. altitude.

Loxura Group.

31. *LOXURA ATYMNUS*, Cram.

Mergui, Myitta.

32. *YASODA TRIPUNCTATA*, Hew.

Mergui.

33. *DRUPADIA MOOREI*, Distant, (*boisduvalii*, Moore).

Mergui, Myitta, common. I cannot find any constant difference between Mergui and Perak specimens. The genus *Drupadia* differs from *Biduanda* in having the third subcostal vein undivided (in *Biduanda* it is forked just before its termination) and a conspicuous sex-mark on the hindwing above, between the bases of the costal and subcostal veins. Nevertheless, the two are extremely similar in the entire structure of the egg, the larva, and the imago; and in any system of classification ought to be brought together.

34. *BIDUANDA THESMIA*, Hew. (*fabricii*, Moore).

Mergui, Myitta. I cannot find any constant difference between Mergui and Perak specimens.

35. *BIDUANDA MELISA*, How.

One male of this rare little species, Myitta. A similar kind occurs at high elevations in Perak, but whether it is this species or *B. scæva*, Hew., I am unable to say.

36. *BIDUANDA NICEVILLEI*, n. sp., Plate XIII, fig. 16.

Male, above, violet (much richer and bluer than in *B. thesmia*), slightly paler in the middle of the forewing, a narrow, even black border. *Hindwing* with two subanal black spots bordered inwardly by an area irrorated with whitish scales; a marginal black and white line subanally, the cilia partly white, as well as most of the tails. *Below*, much like *B. melisa*, the markings more rufous, less fuscous, the basal spots simple, not annular, the transverse discal band and the outer margin of the forewing rufous brown and ferruginous of various shades, the apical part of the outer margin of the hindwing light ferruginous, the metallic green area large, extending unbroken from the upper median to the internal veins, the submarginal line straighter, and less undulated on both wings. Expanse an inch and a half, the species being larger than either *melisa* or *scudderii*. Two males, Myitta.

I name the species after Mr. Lionel do Nicéville, whose great work on Indian butterflies, equally important for the information which it contains, and for the impetus which it is certainly destined to give to the study of insects in the East, is now in progress.

37. *BIDUANDA SCUDDERII*, n. sp., Pl. XXIII, Fig. 14.

Allied to *thesmia* and somewhat resembling the female of that species. Male, above, dark fuscous, an orange area occupying about a sixth of the forewing, including the lower angle of the cell, and the disc from the base of the lower radial to below the lower median vein; a somewhat large, obscure violet-blue subapical area (not refulgent in any light), not reaching the costa or the outer margin; the hind margin is also tinged with violet. *Hindwing* dull fuscous, a large dull violet area from the cell to the outer margin, between the lower subcostal and the lower median vein, from the cell to the marginal black line, its inner part densely irrorated with bluish-white scales, beyond which lies a transverse darker discal fascia; subanal area nearly black, cilia whitish subanally, tails chiefly black except at the tip. *Underside* much as in *thesmia*, expanse as in *melisa*. One male, Mergui.

I name the species after Mr. S. H. Scudder of Cambridge, Massachusetts, the first numbers of whose magnificent work on the New England butterflies I have just had the good fortune to meet with.

38. *SUASA LISIDES*, Hew.

Myitta.

*Aphnæus Group (Aphnæinae ?).*39. *AMBLYPODIA NARADA*, Horsf.

The Mergui form (*andersonii*, Moore) seems identical with that found in the Malay Peninsula. It is of a brighter, richer blue than the North Indian variety.

40. TICHERRA ACTE, Moore.

Mergni, Myitta. My single female (Myitta) is remarkable in having the white spots on the lower part of the hindwing united into a short very broad band, such as occurs in some specimens of *Cheritra freia*.

41. CHERITRA FREIA, Fab.

Mergni, Myitta.

42. BINDAHARA PHOCIDES, Fab.

One female, Mergni.

43. ZELTUS ETOLUS, Fab. (*etolus*).

Mergui, Myitta.

44. SINTHUSA AMBA, Hew.

Myitta. Differs from *S. nasaka* in the richer blue of the forewing, and the much broader blue area of the hindwing.

45. HYPOLYCENA ERYLUS, Godt.

Mergni, Myitta.

46. CHILIARIA OTHONA, Hew.

Myitta.

47. CHILIARIA MERGUA, n. sp., Pl. XXIII, Fig. 2.

Male, above, dull indigo blue over half the forewing from the costal vein almost to the lower angle, and over the hindwing from the upper subcostal to the submedian vein; cilia dark, lobe with a marginal white line, tails edged and tipped with white. *Below* pearl grey, the apex of the forewing widely, and the costa slenderly light fulvous brown, both wings with a double reddish streak across the end of the cell, and a slender, straight, brighter fulvous, transverse discal fascia, very slenderly bordered with blackish and whitish lines. On the forewing this is nearly straight, unbroken, on the hindwing it is dislocated inwardly below the upper median, and again below the lower median. *Forewing* with an obscure darker submarginal line, cilia dark. *Hindwing* mostly grey, the apex slightly tinged with rufous, the lower and anal part whitish with two submarginal lunular bands, a large black spot, edged apically with orange but without metallic scales, between the lower medians; lobe black edged with white, a slender black edge-line, cilia basally whitish, outwardly dark. Tails much as in *othona*, the anal one longest.

A single male, Mergui. The species somewhat resembles *Zeltus etolus*, though easily distinguished by the short tails and the absence of the blue reflections above. It has still more resemblance to *Sinthusa amba*. On account of the closely appressed costal and first subcostal veins, I place it in *Chiliaria*, though its long narrow wings give it quite a different aspect.

48. TAJURIA JANGALA, Horsf.

Mergui, Myitta.

49. DRINA DONINA, Hew.

Mergui, Myitta, males only.

50. DACALANA VIDURA, Horsf.

Mergui. The specimens resemble those from the Malay Peninsula in all respects. As there seems to be some uncertainty about Horsfield's type, I have not substituted Mr. de Nicéville's name *Arrhenothrix* for *Dacalana*.

51. THAMALA MARCIANA, Hew. (*miniata*).

Mergui.

52. HORAGA ONYX, Moore.

Mergui. My specimens differ from Sikkim ones only in the ground colour of the underside, which is greenish yellow instead of ochreous brown. Only females taken.

53. APHNÆUS LOHITA, Horsf.

Mergui, Myitta.

54. CURETIS MALAYICA, Feld.

My specimens are very inconstant, as is usually the case in this genus.

Subfamily DEUDORIGINÆ.

Genus ARAOTES, nov.

55. ARAOTES LAPITHIS, Moore.

Mergui, Myitta, scarce.

56. DEUDORIX EPIARBAS, Moore, (*epijarbas*).

Myitta.

57. RAPALA SUFFUSA, Moore.

Mergui.

58. RAPALA SCHISTACEA, Moore.

Mergui. An abnormal female was taken with the transverse discal band below wholly obsolete on both wings.

59. RAPALA SPHINX, Fab.

Two males, Myitta. The male of this species sometimes has and sometimes has not a large black patch of metamorphosed scales on the forewing above.

Subfamily PORITINÆ.

Genus PORITIA.

In this genus the upper radial of the forewing originatos at the end of the cell, so that there is a very short upper discocellular. The middle discocellular is upright and very slender, the lower obsolescent.

In the hindwing the discocellulars are also very slender, the upper rather long; the second bifurcation of the median vein is opposite the end of the cell. The apex of the forewing is rather rounded, the upper part of the outer margin being strongly rounded. The markings of the underside are annular and exceedingly variable. The sex-mark at the base of the hindwing of the male is a conspicuous tuft of black hairs on a dark ground. The hindwing of the female is less angled outwardly than in *Massaga*.

60. *PORITIA PHRAATICA*, Hew.

Mergui, common. My females have the ochreous areas small, even less than in Mr. Distant's figure. Mr. de Nicéville has one from the Malay Peninsula in which the hindwing is more than half ochreous. The male is very variable, but I have no specimen so green, or with so large and solid a coloured area as in Mr. Distant's figure. There is in all my specimens a triangular dark patch below the cell and a macular blue band across the apex.

61. *PORITIA HEWITSONII*, Moore, var. *TAVOYANA*, nov.

Myitta, Tavoy, common. The males are remarkably variable; many are wholly indistinguishable from those of *phraatica*. I have taken every variation from those resembling Mr. Distant's figure of *phraatica*, to those with an irregular blue area below the cell, wholly separate from a long submedian streak and a solid oblique subapical band. The underside varies greatly and does not differ from that of *phraatica*. The female is pale blue over fully a third of the forewing, and has more resemblance to the male than to the northern female with its small blue area. In the Tavoy form this extends from the cell to the hind margin, projecting in the interno-median space within an eighth of the outer margin; there is a blue spot in the cell and a variable subapical band sometimes obsolete. The blue area on the hindwing is variable but usually considerable. The ochreous discal spot of the forewing is occasionally present, though obscure.

Genus *MASSAGA*, nov.

I described this genus in 1886, the type being *M. clorinda*, which now turns out to be the male of *Poritia polina*, Hewitson. Lately, being dubious of its generic value, I asked Mr. de Nicéville to omit it in his "Butterflies of India," which he accordingly did. Subsequent examination and the discovery of the female have reassured me as to its distinctness.

In the forewing the upper radial originates a little beyond the cell, so that there is no trace of an upper discocellular vein; the middle discocellular is rather stout and oblique, the lower distinct, sinuous. In

the hindwing, the cell is longer than in *Poritia*, the upper discocellular short, very oblique, the lower long. The second forking of the median vein is considerably before the end of the cell. On the underside the ring-markings of *Poritia* are replaced by simple transverse lines. The apex of the forewing is more pointed, and is usually slightly falcate in both sexes, the upper part of the outer margin being slightly excised. The tuft of the male is inconspicuous in itself, but placed on a conspicuous ochreous patch. The hindwing of the female is conspicuously angled. The sexes are exceedingly unlike. The species are all very rare.

This genus is close to *Deramas* and *Zarona*, which it greatly resembles, but differs in having one subcostal vein less.

62. MASSAGA PEDIADA, Hew., Pl. XXIII, Fig. 15.

Male, above, velvety black; forewing with the following markings rich bluish-green, varying according to the light, namely, one below the cell, clavate, one basal below the internal vein, its terminal part crossing the vein, one a little beyond the cell, oblique, consisting of three quadrate spots, a submarginal row of six spots, the last larger, subcordate. *Hindwing* with a longitudinal mark in the interne-median space from the base, united terminally with the inner of a row of three triangular spots crossing the disc; three submarginal spots in the same spaces as the discal ones, the middle small, lunular, the outer two semi-circular, enclosing black spots, the subanal one largest. *Below* dull rufous brown with a pale violet gloss; forewing with a broken macular line of minute whitish spots across the disc, an outer-discal line of small and very obscure pale lunules, beyond which lies a pale band, the margin brighter rufous. *Hindwing*, base and costa dull rufous brown, most of the rest irrorated with whitish scales, an obscure darker transverse line with two sagittate marks on the median spaces, a submarginal dark zigzag line bordered inwardly by a pale line, a marginal bright reddish line bordered inwardly by slender black and white lines which do not extend to the apex.

Female, above blackish, cilia and costa paler. *Below* rufous brown, much lighter than in the male, a darker rufous streak across the end of the cell of both wings, a similar slender transverse discal fascia, continuous on the forewing, broken and lunular on the hindwing, a darker outer-discal line, obscure on the forewing, blackish subanally on the hindwing, placed in a paler band beyond a darker rufous one; some submarginal blackish scales near the anal angle of the hindwing, the margin of the forewing brighter rufous, hindwing with a brighter rufous marginal line bordered inwardly by slender black and white lines subanally.

63. MASSAGA POTINA, Hew. (? = *Simiskina fulgens*, Distant), Pl. XXIII, Fig. 3.

Male, above velvety black with the following rich blue markings varying according to the light, one below the cell, clavate, extending widely into the median spaces, one below the internal vein, with a spot above the end of it, a series of three spots a little beyond the end of the cell, the upper obscure, the lower quadrate; a submarginal series of six spots, the lower one large and cordate. *Hindwing* with a longitudinal mark in the interno-median space, from the base two-thirds to the outer margin, two discal spots in the next two spaces, three marginal crescents in these three spaces, the subanal one large with a streak outside of it beyond the submedian vein. *Below* rufous brown, brighter than in *pediada*; *forewing* with an obscure darker rufous streak across the end of the cell, a darker rufous line across the disc as far as the lower median, bordered outwardly by a darker bluish-tinged space, an outer-discal obscure lunular line, bordered inwardly by a paler bluish one and outwardly by a broad pale space, which is conspicuous and somewhat ochreous near the apex. Hind margin and interno-median space chiefly dull ochreous, shining; a bright reddish marginal line, cilia blackish. *Hindwing*, base and costa dark rufous-brown, the rest paler rufous, a brighter rufous streak closing the cell, a similar discal series of lunules irregularly placed, an obscure dark outer-discal lunular line obsolete subapically, bordered both inwardly and outwardly by a paler bluish space, and then by a brighter rufous one; a bright rufous marginal line bordered subanally by slender black and white ones, cilia dark.

Female, above bright orange-tawny, the apex and outer margin (not the costa) widely blackish, the ends of the three median and the internal veins brown or even orange, the orange area almost semicircular outwardly; the hind margin and the basal half of the interno-median space are always more or less irrorated with black scales, which also enter the base of the cell; a marginal rufous line, the cilia darker. *Hindwing* orange, generally strongly irrorated with black, the veins less so; an obscure submarginal band of darker quadrate spots; a rufous marginal line, the cilia darker. Some specimens have almost the whole upper surface orange, except the apex and margin of the forewing. *Below* light rufous brown, much paler than in the male, the markings darker ferruginous, resembling those of the male, but more distinct.

One male and five females (only one fresh), taken near Myitta, in the Tavoy district. The male differs from the male of *pediada* in having the markings larger, clearer, and not bluish-green, but blue. The underside is less dark and uniform. Both sexes are more falcate

than in *pediada*, and of larger size. The female generally sits on a leaf with half-open wings, and might easily be taken for a small *Cirrhochroa*, or sometimes for a *Loxura*. In any case its entire departure from the usual colours of the group indicates that it is likely to prove a mimic.

The female is somewhat variable. I have no doubt that it will turn out conspecific with *Poritia potina*,—from the Malay Peninsula—which I only know from Hewitson's figure.

It seems also probable that the insect named by Mr. Distant *Simiskina fulgens* and placed by him in the *Erycinidæ*, is identical* with or at least very closely allied to this species. Unfortunately, he gives no description of the genus, merely noting two particulars in which, it is true, it differs from all Eastern *Erycinidæ*, but agrees with the *Poritias* and with most other genera of the *Lycenidæ*. The figure faithfully represents a rather worn and faded female of this species.

The egg differs from that of *Poritia* in having the hexagonal reticulations very regular and delicate; it has the same extraordinary shape. It differs wholly from the eggs of the Eastern *Nemeobiadæ*, which are all round in horizontal section and without the slightest trace of reticulation.

Subfamily LYCÆNINÆ.

Genus of uncertain position.

64. CATOPGECILMA ELEGANS, Druce.

Mergui, Myitta.

Lycæna Group.

65. CATOCHRYSOPS STRABO, Fab.

Mergui, Myitta.

66. CATOCHRYSOPS PANDAVA, Horsf.

Mergui.

67. CATOCHRYSOPS CNEIUS, Fab.

Mergui.

68. NACADUBA ARDATES, Moore.

Mergui, Myitta.

69. NACADUBA ATRATA, Horsf.

Myitta.

70. NACADUBA PAVANA, Horsf.

Myitta. Like *macrophthalma*, but with the lines of the underside slender and distinct, the basal ones absent.

* Mr. Distant has since informed me that this is not the case.

71. *NACADUBA VIOLA*, Horsf.

Mergui, Myitta.

72. *NACADUBA DANA*, de Nice, (?=*almora*, Druce).

Myitta.

73. *LAMPIDES ÆLIANUS*, Fab.

Mergui, Myitta.

74. *LAMPIDES SUBDITA*, Moore.

Mergui, Myitta.

75. *LAMPIDES BOCHUS*, Cram.

I am not aware of any difference between *Jamides* and *Lampides*, and think it likely that the former genus will have to fall before the latter, which occurs earlier in Hübner. It is to be hoped that no more species of this genus will be described without an examination of the *prehensores*, which are fortunately of great diversity in the different kinds, as if to counterbalance their puzzling similarity in colours and markings.

76. *POLYOMMATUS BÆTICUS*, Linnæus.

Myitta.

77. *TARUCUS PLINIUS*, Fab.

Mergui.

78. *EVERES UMBRIEL*, n. sp., Pl. XXIII, Fig. 1.

Male, above black, the cilia of the hindwing and of the lower angle of the forewing whitish, except at the ends of the veins. *Below* grey-white (much whiter than in *E. kala*) with the following blackish markings, the discal ones quadrate. *Forewing* with a streak across the end of the cell, a broad straight transverse discal band, inwardly dislocated below the middle median, the lower part outwardly oblique, outer margin widely dark, containing an inner lunular and an outer slender whitish fascia. *Hindwing* with a large subcostal, a smaller cellular and a minute abdominal spot all near the base, a streak across the end of the cell, and a broad discal transverse band broken into four quadrate masses of which only the upper two touch each other, the first covering two spaces, the second (strongly dislocated outwardly) three, and the third (nearer the base, oblique), two; the fourth being a small lunule between the submedian and the internal veins. Outer margin broadly dark, containing a row of whitish lunules (the subanal one orange) surrounding black spots of which the two subanal ones are touched with metallic green. A whitish submarginal and a black marginal line, both very slender, the cilia and the tip of the tail white.

The broad, unbroken, quadrate discal bands of the underside easily distinguish this peculiar species from *Everes kala*, de Nicéville, which has rows of round black spots instead. *E. kala* has somewhat the aspect

of a *Zizera* and *E. umbriel* that of a *Catochrysops*. Both species may turn out to be mimics. Since the above was written I have taken *kala* in the Naga Hills from 5,000 to 10,000 feet, along with species mostly Palearctic, while *umbriel* is a purely tropical species, apparently not infrequent in Tenasserim. The type specimen of *kala* is in my opinion a male, so that these two species have wholly lost the usual blue colour of their allies, in this resembling *Everes nysus*. That species, which seems also to occur near Myitta (though I did not capture any), differs slightly from the typical *Everes* in having the discocellular veins of both wings meeting at a perceptible angle, but it seems scarcely worth while to retain the genus (*Talicauda*) which has been founded on it. I took two males of *umbriel* in the Tenasserim Valley, and observed one or two others.

79. *EVERES PARRHASIUS*, Fab.

Mergui.

80. *EVERES PUTLI*, Kollar.

Mergui, Myitta. These two species are wide-ranging. I have taken both in the islands of Sumba and Sambawa, east of Java.

81. *ZIZERA PYGMÆA*, Snell.

Mergui. This also occurs in Sumba and Sambawa.

82. *ZIZERA SANGRA*, Moore.

Mergui, Myitta.

83. *CASTALIUS ROXUS*, Godt.

Mergui, Myitta. In this as well as in the preceding genus, the eyes are but slightly hairy.

84. *CASTALIUS ETHION*, Doub.

Mergui, Myitta.

85. *CASTALIUS ROSIMON*, Fab.

Mergui, Myitta.

86. *CYANIRIS TRANSPECTA*, Moore.

Myitta. I am not sure that this species is distinct from *puspa*.

87. *CYANIRIS PLACIDA*, de Nice.

Myitta.

88. *CYANIRIS MELÆNA*, n. sp., Pl. XXIII, Fig. 13.

Male, above, dark dull blue, resplendent in some lights, the blue extending over less than half the surface of the forewing, sometimes extending above the upper radial vein beyond the cell, the black area very large occupying the upper part of the cell, widening at the lower angle, and extending over more than a third of the hind margin. On the hindwing the blue occupies hardly more than a third of the surface, and does not approach either the costal or abdominal margin. There is no whitish patch on the upper surface. Cilia whitish. *Below* grey-white

with a slight silvery lustre. *Forewing* with a streak across the end of the cell and a curved discal line of six dark streaks set in paler rings, the second, third, fourth and fifth outwardly oblique, the fifth and sixth removed inwardly: a submarginal row of joined ocellus-like spots, consisting of a dark lunule enclosing a pale, dark-pupilled spot, a marginal dark line. *Hindwing* with three distinct basal spots, a streak across the end of the cell, a very irregular series of discal spots, the first very large and black, near the costa, the second minute, near the first but more basal, the next four forming an oblique crescent (the fifth small, the sixth larger, nearer the base), the seventh large, removed outwardly, the eighth (between the submedian and the internal veins) smaller and nearer the base. The submarginal ocelli are as in the forewing, the inner lunular line more serrate. Female unknown.

This species, which is the darkest *Cyaniris* known, was taken in the Tenasserim Valley in February, but in the rains it is perhaps confined to higher lands. An apparently identical species is found in the Malay Peninsula at a considerable height, and seems to be *C. jyntheana*, Distant (*nec de Nicéville*).

The genus *Cyaniris* is better represented in the tropics than is generally supposed. I have myself taken ten species, including *haraldus*, in the Malay Peninsula, eight confined to high elevations; also, seven in the mountains of Eastern Java and four in the Celebes, besides *C. duponchelii*, Godt. (?=*puspa*, Moore) in Sumba and Sambawa, and *C. akasu* in Sambawa at 4,500 feet elevation.

Pithecopa Group.

89. NEOPITHECOPS ZALMORA, Butler.

Mergui, Myitta, commoner than *P. hylax*. The species occurs in Java and Sumba, but is rare in both. It is common from the Chittagong Hill Tracts to South-Eastern Borneo.

90. PITHECOPS HYLAX, Fab.

Myitta, Mergui, scarce.

91. MEGISBA MALAYA, Horsf.

Myitta, Mergui. The species occurs unchanged in Borneo, Java, Sumba, and Sambawa. Not being protected like the two preceding genera, it has acquired narrower and more pointed wings, and a much swifter flight.

Genera of Uncertain Position.

92. NIPHANDA CYMBIA, de Nice.

One male, Myitta. I have taken the allied *N. tessellata* in Province Wellesley, and the Kedah State, Malay Peninsula, where it is very rare.

93. *LYCÆNÆSTHES LYCÆNINA*, Feld.

Mergui, Myitta.

94. *LYCÆNÆSTHES BENGALENSIS*, Moore.

Mergui, Myitta.

95. *SPALGIS EPIUS*, West.

Mergui, differing slightly from Indian specimens, the discal white patch on the forewing below conspicuous. The genus is found everywhere from the Himalayas to Amboyna (occurring in all the islands east of Java), and the species, if there are more than one, are very hard to make out. They live in the drier districts only, the larva apparently feeding on acacias.

96. *TARAKA HAMADA*, Druce.

Myitta. I have also taken it in Eastern Java at 4-5000 feet elevation.

Subfamily GERYDINÆ.

Genus MALAIS, nov.

Differs from *Logania* in the short, thick, slightly flattened legs, the tibiæ being thickest in the middle.

97. *MALAIS SRIWA*, Distant.

One female (Mergui) is obviously of this species. It is possibly distinct from *L. marmorata*, Moore, but the bad state of the types of that species makes its difficult to decide. I postpone a fuller description of the genus.

Of this genus another species occurs at Bassein, Burma; it is one of the smallest and obscurest of Indian butterflies. *Logania malayica* seems rare in the Malay Peninsula (where a number of allied forms occur), but it is rather common in South-Eastern Borneo. The genus is also represented in the Celebes. *Logania andersonii*, Moore, from Mergui, which is probably the *Hypolycæna libna* of Hewitson, is apparently not related to the *Gerydina*, though the wretched state of the sole type makes it difficult to say where it does belong. The venation is extraordinary. There are only three subcostal branches (according to Mr. de Nieéville's phraseology two nervules besides the nervure), the first of which is united with the costal vein for a very short distance.

98. *ALLOTINUS NIVALIS*, Druce, (*Paragerydus nivalis*, Distant; *Logania substrigosa*, Moore).

This species must be placed in *Allotinus*, the third subcostal branch being emitted immediately before the end of the cell, leaving a short but distinct upper discocellular vein, as required by Felder's definition of the genus.

If *substrigosa* be distinct from *nivalis*, my specimens from Mergui and Myitta must be called by that name. But I believe that the two are merely extreme forms of a single species, in which the size and distinctness of the markings of the underside vary greatly. It is a common species from Tavoy to South-Eastern Borneo, and obviously mimics *Neopithecops zalmora*, Butler, from which it is indistinguishable when flying.

99. *ALLOTINUS ALKAMAH*, Distant.

This species represents the Javanese *A. subviolaceus*, Felder, from Mergui to South-Eastern Borneo. The sexes are much alike. In my Tenasserim females the disc of the hindwing is largely covered with bluish scales.

In some specimens of *Allotinus drumila* the third subcostal originates slightly before the end of the cell, leaving the upper discocellular very distinct, while in others it originates after the end of the cell and there is no upper discocellular just as in *Paragerydus taras*. It is also remarkable for the very irregular outline of the wings. This feature is lacking in *Allotinus multistrigatus*, in which the subcostal originates opposite the end of the cell, the upper discocellular being therefore minute.

100. *PARAGERYDUS HORSFIELDI*, Moore, (*Allotinus aphocha*, Kheil).

This is the commonest of the *Gerydinae* from the Chittagong Hill Tracts to South-Eastern Borneo, found in great numbers wherever there is deep shade. I am inclined to think that this species (and not *taras* with its conspicuous reddish apex and margin) is the *Allotinus unicolor* of Felder, but without examining the types of that species it is impossible to decide.

The cell in this species ends halfway* between the bases of the second and third subcostals, which in the male are approximate. On this character the genus *Paragerydus* has been formed, but it is improbable that it can be retained distinct from *Allotinus*. The following species seems to be structurally halfway between the two.

101. *PARAGERYDUS TARAS*, n. sp., Pl. XXIII, Fig. 10.

Above, dark brown, deepest apically on the forewing, lacking both the elongate discal band of the male, and the pale discal area of the female of *P. horsfieldii*. *Below* the ground is creamy whitish (dull bluish grey in *P. horsfieldii*, the stræ less numerous, especially discally and basally, and less evenly distributed; the apex of the forewing is widely tinged with rufous brown, the cilia rather long and also rufous brown; a rufous brown marginal line; the transverse macular discal band is

* In the female. In some males it is nearer the base of the second.

nearly as obvious as in *P. horsfieldii*, but is composed of slender, crescent-shaped markings, beyond which is a submarginal line of blackish dots, of which the subapical ones on the forewing, situated in the brown area, are touched outwardly with white.

In the male the forewing is longer and more acute than in *P. horsfieldii*, its outer margin but little curved, while in the female its upper portion is strongly convex. In the hindwing the degree of marginal undulation varies greatly, as is also the case with *horsfieldii*. The female is paler than the male and while flying has almost the air of a white butterfly.

The prehensores obviously differ from those of *horsfieldii*, the tips of the unci (*tegumina*) being rounded and but slightly oblique, while in *P. horsfieldii* they are very oblique and regularly tapering. As seen from the side, the clasps (*harpagones*) end in two processes separated by a deep sinus, the upper longest, and ending in a strong hook directed upwards. In *P. horsfieldii* the upper process is obsolescent, represented only by an angle in the upper contour of the other.

The types are from the Tenasserim Valley, east of Tavoy, Burma. I have also taken it in the Chittagong Hill Tracts. An apparently identical form occurs in the Malay Peninsula and South-Eastern Borneo, but I have no specimens now available for comparison.

The venation of this species is interesting. The origin of the third subcostal vein is immediately beyond the end of the cell, so that, as in *Paragerydus horsfieldii*, there is no upper discocellular vein. In the male, the second and third subcostal veins are remarkably approximate throughout, and the bifurcation of the latter is nearer the end of the cell than the apex of the wing. In this it resembles *Allotinus alkamah*.

102. *GERYDUS ANCON*, n. sp., Pl. XXIII, Fig. 8.

Male, above, forewing with the apex and outer margin black, and the base (as well as the hindwing) dull fuscous leaving about two-fifths of its area pure white. A white band extends obliquely from the costa one-fourth from the base, widening to the middle median vein two-thirds from the base, where it touches another white area extending from the middle median vein to the hind margin, of which it occupies the middle two-thirds, filling likewise nearly two-thirds of the interno-median space, and extending, except at its excised lower angle, within one-eighth of the outer margin, leaving the basal third of the interno-median space fuscous, and almost enclosing, with the superior band, an elongate black area occupying the basal part of the lower median space and united with the fuscous basal area. The upper median vein is swollen where it crosses the white band, from just beyond its origin one-fourth towards its termination. *Below* light rufous brown, the

white areas of the upperside reduced in size and set in a wide blackish area, a marginal dark line on the forewing, and a series of obscure dark submarginal dots on both wings. *Hindwing* with obscure mottlings of slightly different shades of pale brown; three of these between the costal and subcostal veins are bordered by transverse blackish lines; an irregular blackish fascia extends obliquely across the disc from the submedian space to the radial vein.

My single female lacks of course the swelling of the upper median vein. The hindwing is slightly angled in the middle. The lower white area of the forewing is much smaller, being narrow and oblique, occupying only one-third of the hind margin, bent inwardly just above the internal vein, its terminal quadrate portion (between the middle median vein and the middle of the interno-median space) being deliscent outwardly along the line of the lower median vein. The underside is paler, less reddish and more variegated than in the male, with the markings very irregular. Expanse $2\frac{1}{2}$ inches.

Two males and a female, from the Tenasserim Valley, Tavoy district. 103. *GERYDUS CROTON*, n. sp., Pl. XXIII, Fig. 9.

Male, above, dark brown, the apical part of the forewing black, an obscure fuliginous whitish band extending obliquely from beyond the end of the cell to the middle median vein two-thirds from its origin, two obscure whitish spots beyond and below it, one on each side of the lower median vein, the lower sometimes obsolete. *Below* very dark, variegated with many shades of brown; the band is dull ochreous, broad and well marked, the upper of the two spots is large and but slightly separated from it, the lower very small, oblique and distinct, there are some costal markings, a subapical cordate spot, and three submarginal blackish dots. The *hindwing* has the basal half very dark with some paler brown transverse markings edged with dark, a blackish semicircular band with a slight bluish gloss extending across the wing beyond the cell, after which comes a semicircle of joined cordate reddish-brown maculae, beyond which the ground is again dark, with a light brown marginal band near the apex.

Female, upperside. The band is more distinct and nearly white, extending obliquely almost to the costa and to the middle median vein two-thirds from its origin, the upper of the two spots separated from it only by the vein, the lower smaller and more isolated. *Below* much lighter and more variegated than the male, the dark submarginal dots forming a complete series on the forewing, the outer part of the hindwing pale brown, except a large sordid area centreing round the upper median vein. Expanse over two inches.

The lower angle of the forewing is in this species somewhat less produced inferiorly than in *G. ancon*, the hindwing of the female somewhat

more angled in the middle, the upper median vein of the forewing of the male is not swollen. The prehensors differ but slightly.

Three males and a female taken in the Tenasserim Valley. Like the preceding species it has a strong irregular flight (quite different from the feeble uncertain motions of the *Paragerydi* and *Loganias*), wheeling many times round the same circle, or up and down a certain length of the path, and would be difficult to catch but for its habit of returning again and again to the same leaf.

104. *GERYDUS BOISDUVALII*, Moore.

One female from the Tenasserim Valley, Tavoy district.

105. *GERYDUS BIGGSI*, Distant.

One female, Tenasserim Valley. These four species of *Gerydus* differ somewhat in the length of the cell which increases in the following order—*croton*, *ancon*, *boisduvalii*, *biggsii*. In the first, the end of the cell is immediately beyond the origin of the second subcostal, in the last half-way between those of the second and third, as in *Paragerydus*.

Another female *Gerydus* from the Tenasserim Valley resembles *G. biggsii*, but the white of the forewing occupies the whole disc and two-thirds of the cell, just reaching the hind margin and covering nearly half the area of the wing. The hindwing is all brown, and the underside much as in *biggsii*.

Subfamily LIPHYRINÆ.

I saw what I supposed to be a male of this species, near Myitta, flying slowly in the twilight. Having no net with me, I lost it. The species of *Allotinus* are also often seen flying almost till dark.

EXPLANATION OF PLATE XXIII.

- Fig. 1 *Everes umbricel*, n. sp., ♂, p. 433.
 " 2 *Chliaria merguia*, n. sp., ♂, p. 427.
 " 3 *Massaga potina*, Hew., ♂, p. 431.
 " 4 *Surendra florimel*, n. sp., ♀, p. 424.
 " 5 *Flos artegai*, n. sp., ♂, p. 423.
 " 6 *Arhopala duessa*, n. sp., ♂, p. 419.
 " 7 *Arhopala hellenore*, n. sp., ♂, p. 422.
 " 8 *Gerydus ancon*, n. sp., ♂, p. 438.
 " 9 *Gerydus croton*, n. sp., ♂, p. 439.
 " 10 *Paragerydus taras*, n. sp., ♂, p. 437.
 " 11 *Arhopala perissa*, n. sp., ♂, p. 419.
 " 12 *Arhopala pastorella*, n. sp., ♂, p. 418.
 " 13 *Cyaniris melana*, n. sp., ♂, p. 434.
 " 14 *Biduanda scudderii*, n. sp., ♂, p. 426.
 " 15 *Massaga pediada*, Hewitson, ♂, p. 430.
 " 16 *Biduanda nicevillei*, n. sp., ♂, p. 426.
 " 17 *Surendra florimel*, n. sp., ♂, p. 424.
 " 18 *Arhopala delphoebe*, n. sp., ♂, p. 421.

